

WHAT IS CLAIMED IS:

1 1. A node of a packet switching network which handles a media stream of
2 packets, the node comprising:

3 a processing chain comprising plural processing units through which a packet of
4 the media stream is routed, each of the plural processing units generating an intra-node
5 performance monitoring packet which includes an indication of time spent by the
6 packet of the media stream in the respective processing unit;

7 a performance monitoring unit which receives the intra-node performance
8 monitoring packets generated by the respective plural processing units and which uses
9 contents of the intra-node performance monitoring packets to provide an indication of
10 delay in the node for the media stream.

1 2. The node of claim 1, wherein the performance monitoring unit uses the
2 contents of the intra-node performance monitoring packets to determine an overall
3 delay of the packet of the media stream through the plural processing units of the node.

1 3. The node of claim 1, wherein at least one of the plural processing units has
2 an associated queue, and wherein the intra-node performance monitoring packet
3 generated by the at least one of the plural processing units with the associated queue
4 includes a first component and a second component of the of the time spent by the
5 packet of the media stream in the at least one of the plural processing units with the
6 associated queue, the first component being a delay experienced by the packet of the
7 media stream attributable to processing performed by the at least one processing units
8 with the associated queue, the second component being a delay experienced by the
9 packet of the media stream attributable to the associated queue.

1 4. The node of claim 1, wherein the performance monitoring unit acquires a
2 time required for the packet of the media stream to travel between a first processing
3 unit and a second processing unit.

1 5. The node of claim 4, wherein the performance monitoring unit estimates the
2 time required for the packet of the media stream to travel between a first processing
3 unit and a second processing unit with reference to an inter-unit delay monitor packet
4 generated by the performance monitoring unit.

6. The node of claim 5, further comprising a switch which interconnects the processing units and the performance monitoring unit, wherein the inter-unit delay monitor packet is a switch-monitor packet, and wherein the performance monitoring unit determines a time required for the switch-monitoring packet to travel between the performance monitoring unit and a selected one of the plural processing units.

7. The node of claim 6, wherein the performance monitoring unit estimates the time required for the packet of the media stream to travel between a first processing unit and a second processing unit by determining an average transit time of the switch monitor packet between the selected one of the plural processing units and the performance monitoring unit.

8. The node of claim 1, wherein the performance monitoring unit estimates the time required for the packet of the media stream to travel between a first processing unit and a second processing unit by (1) determining a difference between an arrival time at the performance monitoring unit of an intra-node performance monitoring packet from the second processing unit and an arrival time at the performance monitoring unit of an intra-node performance monitoring packet from the first processing unit, and (2) adding a time delay in the first processing unit to the difference (1).

9. The node of claim 1, each of the plural processing units handles plural media streams, and wherein the performance monitoring unit provides an indication of delay in the node for each of the plural media streams.

10. For use in a node of a packet switching network which handles a media stream of packets, a method comprising:
generating, at each of plural processing units comprising a processing chain through which a packet of the media stream is routed, an intra-node performance monitoring packet which includes an indication of time spent by the packet of the media stream in the respective processing unit;
using contents of the performance monitoring packets to provide an indication of delay in the node for the media stream.

1 11. The method of claim 9, further comprising using the contents of the intra-
2 node performance monitoring packets to determine an overall delay of the packet of the
3 media stream through the plural processing units of the node.

1 12. The method of claim 9, further comprising including in the intra-node
2 performance monitoring packet a first component and a second component of the of the
3 time spent by the packet of the media stream in the respective processing unit, the first
4 component being a delay experienced by the packet of the media stream attributable to
5 processing performed by respective processing unit, the second component being a
6 delay experienced by the packet of the media stream attributable to a queue associated
7 with the respective processing unit.

1 13. The method of claim 9, further comprising transmitting the intra-node
2 performance monitoring packet from the respective processing unit to a performance
3 monitoring unit through a switch.

1 14. The method of claim 9, further comprising acquiring a time required for the
2 packet of the media stream to travel between a first processing unit and a second
3 processing unit.

1 15. The method of claim 14, further comprising estimating the time required for
2 the packet of the media stream to travel between a first processing unit and a second
3 processing unit with reference to an inter-unit delay monitor packet generated by a
4 performance monitoring unit of the node.

1 16. The method of claim 15, wherein the inter-unit delay monitor packet is a
2 switch-monitor packet, and further comprising the performance monitoring unit
3 determining a time required for the switch-monitoring packet to travel between the
4 performance monitoring unit and a selected one of the plural processing units.

1 17. The method of claim 16, further comprising the performance monitoring
2 unit estimating the time required for the packet of the media stream to travel between a
3 first processing unit and a second processing unit by determining an average transit
4 time of the switch monitor packet between the selected one of the plural processing
5 units and the performance monitoring unit.

1 18. The method of claim 9, further comprising the performance monitoring unit
2 estimating the time required for the packet of the media stream to travel between a first
3 processing unit and a second processing unit by (1) determining a difference between
4 an arrival time at the performance monitoring unit of an intra-node performance
5 monitoring packet from the second processing unit and an arrival time at the
6 performance monitoring unit of an intra-node performance monitoring packet from the
7 first processing unit, and (2) adding a time delay in the first processing unit to the
8 difference (1).

1 19. The method of claim 9, wherein each of the plural processing units handles
2 plural media streams, and further comprising providing an indication of delay in the
3 node for each of the plural media streams.